11-1-1969

Some Common Vegetable Diseases

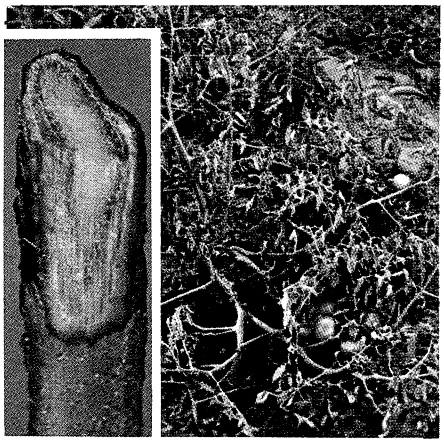
Donald H. Scott

Eric G. Sharvelle

CE 3 PURDUE UNIVERSITY
Cooperative Extension Service
Department of Botany and Plant Pathology

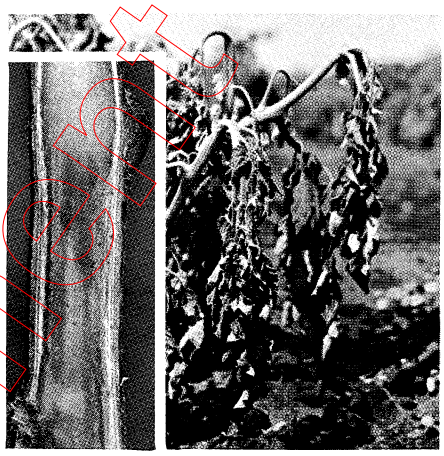
Publication BP-8-13

SOME COMMON VEGETABLE DISEASES

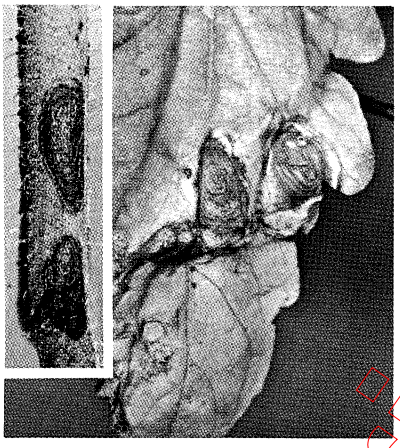


1. FUSARIUM WILT OF TOMATOES AND CROSS SECTION OF STEM

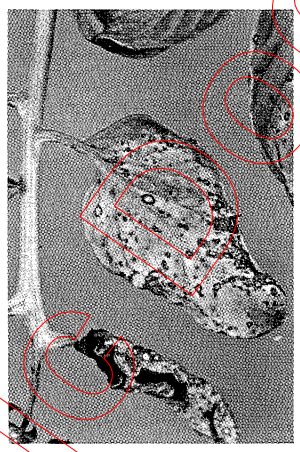
2. SOUTHERN BLIGHT OF TOMATO



3. BACTERIAL WILT OF TOMATO WITH CUT SECTION OF STEM

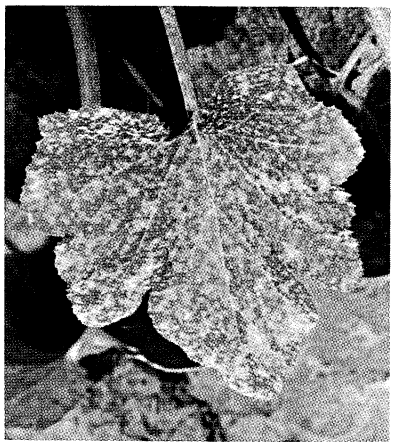


4. EARLY BLIGHT OF TOMATO ON LEAF AND STEM



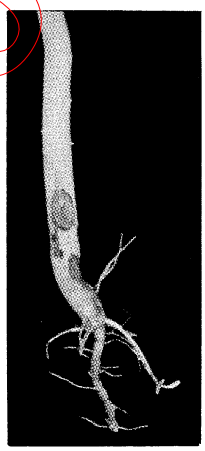
5. GRAY LEAF SPOT ON TOMATO LEAFLETS

6. CORN SMUT

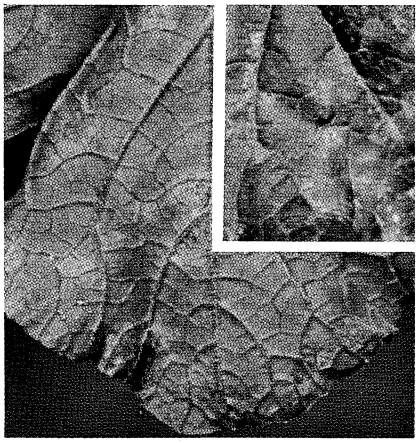


7. POWDERY MILDEW ON LEAF

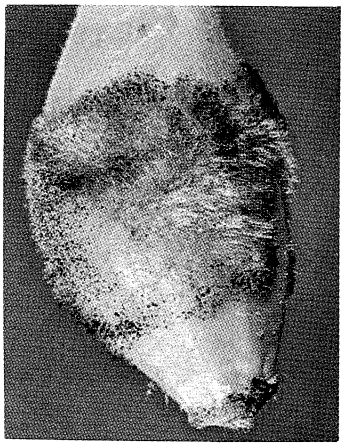
8. ROOT KNOT NEMATODE GALLS ON ROOTS



9. STEM LESION ON BEAN



10. DOWNY MILDEW. UPPER AND LOWER LEAF SURFACE



11. SQUASH FRUIT ROT

PREPARED BY THE CLEMSON UNIVERSITY COOPERATIVE EXTENSION SERVICE'S ENTOMOLOGY - PLANT PATHOLOGY AND AGRICULTURAL COMMUNICATIONS SECTIONS, FEDERAL EXTENSION SERVICE COOPERATING

Purdue University
Cooperative Extension Service
Department of Botany and Plant Pathology

Publication BP-8-13

SOME COMMON VEGETABLE DISEASES

An Aid to Identification

1. FUSARIUM WILT OF TOMATOES, caused by the fungus *Fusarium oxysporum* f. *lycopersici,* is one of the most severe diseases affecting tomatoes in Indiana. It may occur at any time during the growing season but most commonly appears when fruiting becomes heavy. The first symptom is usually a yellowing or wilting of a single leaflet, generally on the lower part of the plant. As the disease develops, progressive yellowing and wilting occurs. Often the symptoms appear first on one side of the stem. Susceptible plants usually die before maturity, producing few, if any, fruit. When an affected stem is cut close to the base of the plant, a distinct, dark brown discoloration of the vascular tissues is evident (see inset).

2. SOUTHERN BLIGHT OF TOMATOES, is caused by the fungus *Sclerotium rolfsii (Pellicularia rolfsii).* Generally, this disease is not found in Indiana, except when infected transplants are shipped into the State from the southern states. The major symptom is a dark brown lesion on the stem just below the soil surface resulting in a progressive yellowing or wilting of the foliage beginning with the lower most leaves. The stem lesion may become covered with a white cobwebby mold growth with numerous globular, brown, sclerotia found on or within the lesion.

3. BACTERIAL WILT OF TOMATO may easily be confused with Fusarium or Verticillium wilt. However, if an affected stem is cut near the ground line and squeezed, droplets of sticky sap may appear. These droplets will adhere to a finger or knife blade and may be pulled into strands ¼ inch or longer. This test is helpful in the diagnosis of bacterial wilt. Plants affected with Fusarium or Verticillium wilt will not produce sap sticky enough to be pulled into strands. Bacterial wilt of tomato does not normally occur in Indiana.

4. EARLY BLIGHT OF TOMATO, caused by the fungus *Alternaria solani,* can cause severe defoliation of plants in Indiana. The fungus attacks leaves, stems, or weakened fruit. The first symptoms of early blight are small brown lesions occurring on the older leaves. These lesions enlarge until they are ¼ to ½ inch in diameter and show concentric rings or ridges giving a target spot affect. Affected leaves yellow and drop prematurely. Severe defoliation exposes the ripening fruit and makes them more susceptible to sunscald and infection by the Anthracnose fungus. Early blight may produce a dark, sunken leathery lesion at the stem end of the fruit.

5. GRAY LEAF SPOT OF TOMATO, caused by the fungus *Stemphylium solani,* occurs only on the leaves. The disease first appears as minute, circular, sunken, brownish to black lesions, either singly or massed in large numbers on the leaflet. Some of the lesions may be surrounded by a yellow halo. As the spots enlarge, the central area dies and turns grayish brown. Another disease, called Septoria blight, caused by the fungus *Septoria lycopersici* produces somewhat similar symptoms and occurs more commonly on tomatoes in Indiana. Septoria blight produces small, circular, water soaked areas on the surface of the lower leaves, which eventually form somewhat circular lesions with dark margins and gray centers rarely more than ⅛ inch in diameter. The centers of the lesions on the upper surface are characteristically marked by minute, black, fruiting bodies just large enough to be seen by the unaided eye. While gray leaf spot affects only the leaves, Septoria leaf blight may affect stems, petioles, blossoms and flower stalks.

6. CORN SMUT, caused by the fungus *Ustilago maydis* is a common disease in Indiana. The disease may affect any part of the plant above ground. The smut gall at first is composed of a white smooth covering of corn tissue that encloses a large mass of black, powdery spores. With age the covering becomes dry and brittle, breaks open exposing the spores.

7. POWDERY MILDEW OF CUCURBITS, caused by the fungi *Erysiphe cichoracearum* or *Sphaerotheca fuliginea,* commonly occurs on pumpkin, squash, cucumber, gourds, muskmelons, and occasionally watermelons. It appears as a superficial, powdery, white to dirty gray fungus growth on the upper leaf surface. The disease may also affect the lower leaf surface, petioles and young stems. It rarely affects the fruit. Severely affected leaves gradually turn yellow and die. Affected vines are usually weakened and yellowish.

8. ROOT KNOT NEMATODE (*Meloidogyne* spp.) may attack nearly 2000 different plants including every known vegetable. Cucumber, pumpkin, tomato, eggplant, lettuce, spinach, parsley, carrots, celery, parsnip and celeriac are the most seriously affected vegetable crops. Asparagus, beans, beets, sweet potatoes and radishes may become infected but are generally considered less susceptible. The first above ground symptom of root knot damage is usually a yellowish, unthrifty appearing plant. Examination of infested roots reveals small globular, abnormal growths on the roots. It is usually necessary to submit specimens to a qualified nematologist in order to positively determine the species of nematode involved.

9. STEM LESIONS ON BEAN may be caused by three different common soil-inhabiting fungi that may attack plants at any stage of growth. Fusarium root and stem rot, caused by *Fusarium solani* f. *phaseoli,* is characterized by slight reddish to brick red lesions on the tap root below the soil surface. Affected plants may be stunted and unthrifty. During extended dry periods, affected plants usually die. Rhizoctonia root rot, caused by *Rhizoctonia solani (Pellicularia filamentosa)* may produce a water soaked rotting of the stem near the soil line on young seedlings, in which case the seedlings are killed. Stem cankers are reddish brown to brick red and are slightly sunken and extend lengthwise on the stem. The pith of diseased stems may also turn brick red. Affected plants are often stunted with yellow leaves. Pythium root rot, caused by *Pythium* spp. may quickly kill young seedlings from a colorless to dark brown, watery rot.

10. DOWNY MILDEW OF CUCURBITS caused by the fungus *Pseudoperonospora cubensis* may severely attack cucumbers and muskmelons where moisture is plentiful and temperature moderately high. Pumpkins, squash, and gourds may also be infected. The disease rarely attacks watermelons. The first symptoms of downy mildew are pale green areas, which soon become yellow, angular lesions bounded by the leaf vein. During moist weather, the lower leaf surface may have spots of purplish-pink fungus mycelium. This characteristic rarely occurs on muskmelons. The entire leaf dies quickly with the leaves near the center of the hill being first attacked. Fruits are seldom directly affected but are dwarfed in growth and poor in flavor.

11. SQUASH FRUIT ROT may be caused by species of several fungi. In most cases lesions of varying descriptions are produced on the fruits usually as they near maturity. Infection of fruit by any of the fungi may be accompanied by a bacterial soft rot which may destroy the entire fruit.

Prepared by Donald H. Scott and Eric G. Sharvelle, plant pathologists.

11/69 (2M)

Cooperative Extension Work in Agriculture and Home Economics, State of Indiana, Purdue University and U. S. Department of Agriculture Cooperating. H. G. Diesslin, Director, Lafayette, Ind. Issued in furtherance of the Acts of May 8 and June 30, 1914.